

Application No. 10/613,678
Amendment dated April 10, 2006
Reply to Office action of January 10, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 Claim 1 (original): A refurbisher for treating at least one intervertebral
2 disc, said refurbisher comprising:
3 (a) a ribbon-like energy application head having an energy application
4 region and a tissue protecting region; and
5 (b) a control member operationally connected to said ribbon-like
6 energy application head, said control member suitable for
7 controlling said ribbon-like energy application head during
8 treatment of said at least one intervertebral disc.
9

1 Claim 2 (currently amended): The refurbisher of claim 1, said energy
2 application region having a surface that contacts a treatment area, [[wherein]] said
3 ribbon-like energy application head [[is]] has an expandable and contractible layer
4 opposite the treatment area surface of said energy application region.

1 Claim 3 (currently amended): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head has at least one internal energy transmission layer.
3

1 Claim 4 (currently amended): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head has at least one heat generation layer energy
3 application layer containing heating elements.
4

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1 Claim 5 (currently amended): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head has at least one internal insulation layer.

3
1 Claim 6 (currently amended): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head has at least one internal layer for deflecting the
3 overlying dural sac and nerve roots to protect them from the effects of the thermal
4 treatment.

5
1 Claim 7 (currently amended): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head has at least one expandable and contractable
3 internal layer.

4
1 Claim 8 (currently amended): The refurbisher of claim 1, said ribbon-like
2 energy application head further comprising:

- 3 (a) an internal bottom layer having a heat generator therein;
4 (b) an internal middle layer providing thermal insulation; and
5 (c) an internal top layer for deflecting the overlying dural sac and nerve
6 roots to protect them from the effects of the thermal treatment.

7
1 Claim 9 (original): An apparatus for treating at least one intervertebral
2 disc, said apparatus comprising:

- 3 (a) an expandable and contractible energy application head having an
4 energy application region and a tissue protecting region; and
5 (b) said energy application head having a distance between said
6 energy application region and said tissue protecting region wherein
7 said distance is variable to protect tissue associated with said at
8 least one intervertebral disc.

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1 Claim 10 (original): The apparatus of claim 9, said energy application
2 head further comprising:

- 3 (a) smooth, rounded edges;
4 (b) a domed center section; and
5 (c) said edges sloped to said domed center section;
6 (d) wherein said energy application head has a wedge-shaped head
7 geometry.

8
1 Claim 11 (original): The apparatus of claim 9, wherein said energy
2 application head is a ribbon-like energy application head having an energy application
3 region and a tissue protecting region.

4
1 Claim 12 (original): The apparatus of claim 9, said energy application
2 region is selected from the group consisting of:

- 3 (a) a flexible energy application region;
4 (b) a flat energy application region;
5 (c) an concave energy application region;
6 (d) a convex energy application region; and
7 (e) a malleable energy application region.

8
1 Claim 13 (original): The apparatus of claim 9, said distance between said
2 energy application region and said tissue protecting region being variable in proportion
3 to the amount of energy being delivered to the intervertebral disc.

4
1 Claim 14 (original): The apparatus of claim 9, said distance between said
2 energy application region and said tissue protecting region being automatically variable.

3
1 Claim 15 (original): The apparatus of claim 9, said distance between said
2 energy application region and said tissue protecting region being manually variable.

3
1 Claim 16 (original): The apparatus of claim 9, said distance between said
2 energy application region and said tissue protecting region being variable by
3 mechanically expanding and contracting said expandable and contractible energy
4 application head.

5
1 Claim 17 (original): The apparatus of claim 9 further including an
2 inflatable portion for expanding and contracting said expandable and contractible
3 energy application head.

4
1 Claim 18 (original): An energy application device, said device comprising:
2 (a) an energy application head having an energy application region
3 and a tissue protecting region;
4 (b) a distance between said energy application region and said tissue
5 protecting region;
6 (c) said energy application head having a contracted state in which
7 said distance is a minimum distance;
8 (d) said energy application head having an expanded state in which
9 said distance is a protecting distance greater than said minimum
10 distance; and
11 (e) means for varying said distance between said minimum distance
12 and said protecting distance.

13
1 Claim 19 (original): The device of claim 18, said energy application head
2 further comprising:
3 (a) smooth, rounded edges;
4 (b) a domed center section; and
5 (c) said edges sloped to said domed center section;

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- 6 (d) wherein said energy application head has a wedge-shaped head
7 geometry.
8

1 Claim 20 (original): The device of claim 18, wherein said energy
2 application head is a ribbon-like energy application head having an energy application
3 region and a tissue protecting region.

4
1 Claim 21 (previously presented): A method for thermally treating an
2 intervertebral disc while thermally protecting vulnerable tissues, said method comprising
3 the steps of:

- 4 (a) gaining access to a vertebral column;
5 (b) epidurally approaching the posterior aspect of said at least one
6 intervertebral disc with a ribbon-like energy application head having
7 an energy application region, a tissue protecting region, and a
8 distance defined between said energy application region and said
9 tissue protecting region;
10 (c) varying said distance to protect tissue associated with said at least
11 one intervertebral disc to maintain a safe temperature in vulnerable
12 tissues near said at least one intervertebral disc; and
13 (d) applying energy to a posterior aspect of said at least one
14 intervertebral disc while maintaining a safe temperature in said
15 vulnerable tissues near said at least one intervertebral disc.

16
1 Claim 22 (original): The method of claim 21, further comprising at least
2 one step selected from the group of steps consisting of:

- 3 (a) evaluating an extent of disc injury;
4 (b) calculating an amount of energy needed to refurbish thermally said
5 at least one intervertebral disc;

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- 6 (c) monitoring an amount of energy delivered and a temperature in
7 vulnerable tissues around said at least one intervertebral disc;
8 (d) observing and evaluating an amount of shrinkage and
9 strengthening of said at least one intervertebral disc to determine
10 an intensity and duration of further energy delivery; and
11 (e) verifying that said shrinkage and strengthening of said at least one
12 intervertebral disc is mechanically successful.

13

1 Claim 23 (previously presented): The refurbisher of claim 1 wherein said
2 ribbon-like energy application head is an expandable and contractible energy
3 application head, said an expandable and contractible energy application head further
4 including an inflatable portion for expanding and contracting said expandable and
5 contractible energy application head.

6

1 Claim 24 (previously presented): The device of claim 18 further
2 comprising an inflatable portion for expanding and contracting said energy application
3 head between said expanded state and said contracted state.

4

1 Claim 25 (previously presented): The method of claim 21, said step of
2 varying said distance further comprising the steps of expanding an inflatable portion to
3 increase said distance and contracting said inflatable portion contract to decrease said
4 distance.

5

1 Claim 26 (new): The refurbisher of claim 1, wherein said ribbon-like
2 energy application head is elongated and relatively flat, said ribbon-like energy
3 application head having a length, a width, and a height, said length being at least three
4 times said width, said height being less than half said width.

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1 Claim 27 (new): The apparatus of claim 9, wherein said energy
2 application head is elongated and relatively flat, said energy application head having a
3 length, a width, and a height, said length being at least three times said width, said
4 height being less than half said width.

5

1 Claim 28 (new): The device of claim 18, wherein said energy application
2 head is elongated and relatively flat, said energy application head having a length, a
3 width, and a height, said length being at least three times said width, said height being
4 less than half said width.

5

1 Claim 29 (new): The method of claim 21, further comprising the step of
2 providing an elongated and relatively flat ribbon-like energy application head, said
3 ribbon-like energy application head having a length, a width, and a height, said length
4 being at least three times said width, said height being less than half said width.

5

1 Claim 30 (new): The apparatus of claim 9, said energy application head
2 further comprising:

- 3 (a) an internal top layer for deflecting the overlying dural sac and nerve
4 roots to protect them from the effects of the thermal treatment; and
5 (b) an internal bottom layer having a heat generator therein.

6

1 Claim 31 (new): The device of claim 18, said energy application head
2 further comprising:

- 3 (a) an internal top layer for deflecting the overlying dural sac and nerve
4 roots to protect them from the effects of the thermal treatment; and
5 (b) an internal bottom layer having a heat generator therein.

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1 Claim 32 (new): The method of claim 21, further comprising the step of
2 providing an energy application head comprising:

- 3 (a) an internal top layer for deflecting the overlying dural sac and nerve
4 roots to protect them from the effects of the thermal treatment; and
5 (b) an internal bottom layer having a heat generator therein.

6
1 Claim 33 (new): The apparatus of claim 9, wherein said energy
2 application region has a surface that contacts a treatment area, said energy application
3 head further comprising an expandable and contractible layer opposite the treatment
4 area surface of said energy application region.

5
1 Claim 34 (new): The device of claim 18, wherein said energy application
2 region has a surface that contacts a treatment area, said energy application head
3 further comprising an expandable and contractible layer opposite the treatment area
4 surface of said energy application region.

5
1 Claim 35 (new): The method of claim 21, further comprising the step of
2 providing a ribbon-like energy application head having a surface that contacts a
3 treatment area, and an expandable and contractible layer opposite the treatment area
4 surface of said energy application region.